

Claims

[c1] What is claimed is:

1.A capacitive acceleration sensor comprising:
a non-single-crystal-silicon-based substrate;
a polysilicon beam structure having a movable section,
the movable section comprising a movable electrode;
a polysilicon supporter positioned on the non-single-crystal-silicon-based substrate for fixing the beam structure and forming a distance between the beam structure and the non-single-crystal-silicon-based substrate;
a stationary electrode positioned on the non-single-crystal-silicon-based substrate and opposite to the movable section of the beam structure, the stationary electrode and the movable electrode constituting a plate capacitor; and
a thin film transistor (TFT) control circuit positioned on the non-single-crystal-silicon-based substrate and electrically connected to the plate capacitor.

[c2] 2.The capacitive acceleration sensor of claim 1 wherein the non-single-crystal-silicon-based substrate is a glass substrate.

- [c3] 3.The capacitive acceleration sensor of claim 2wherein the TFT control circuit is a low temperature polysilicon TFT control circuit.
- [c4] 4.The capacitive acceleration sensor of claim 1 wherein the non-single-crystal-silicon-based substrate is a quartz substrate.
- [c5] 5.The capacitive acceleration sensor of claim 4wherein the TFT control circuit is a high temperature polysilicon TFT control circuit.
- [c6] 6.The capacitive acceleration sensor of claim 1wherein the stationary electrode comprises aluminum (Al), titanium (Ti), platinum (Pt), or alloys.
- [c7] 7.The capacitive acceleration sensor of claim 1 wherein the beam structure and the supporter are formed simultaneously.
- [c8] 8.The capacitive acceleration sensor of claim 7wherein the beam structure and the supporter both comprise polysilicon.
- [c9] 9.The capacitive acceleration sensor of claim 1wherein the movable electrode comprises doped polysilicon or a conductive material.

- [c10] 10. The capacitive acceleration sensor of claim 1 wherein the non-single-crystal-silicon-based substrate further comprises a thin film transistor display region for displaying a variation of pressure detected by the capacitive acceleration sensor.
- [c11] 11. A capacitive acceleration sensor comprising:
an insulating substrate;
a cantilever beam structure positioned on the insulating substrate having a movable section, the movable section comprising a movable electrode;
a stationary electrode positioned on the insulating substrate and opposite to the movable section of the cantilever beam structure, the stationary electrode and the movable electrode constituting a plate capacitor; and
a control circuit positioned on the insulating substrate and electrically connected to the plate capacitor.
- [c12] 12. The capacitive acceleration sensor of claim 11 wherein the stationary electrode comprises aluminum (Al), titanium (Ti), platinum (Pt), or alloys.
- [c13] 13. The capacitive acceleration sensor of claim 11 wherein the cantilever beam structure comprises polysilicon.
- [c14] 14. The capacitive acceleration sensor of claim 11 wherein the movable electrode comprises doped polysilicon or a

conductive material.

- [c15] 15.The capacitive acceleration sensor of claim 11wherein the insulating substrate is a glass substrate.
- [c16] 16.The capacitive acceleration sensor of claim 15wherein the control circuit is positioned on the glass substrate and the control circuit comprises a low temperature polysilicon thin film transistor control circuit.
- [c17] 17.The capacitive acceleration sensor of claim 11wherein the insulating substrate is a quartz substrate.
- [c18] 18.The capacitive acceleration sensor of claim 17wherein the control circuit is positioned on the quartz substrate and the control circuit comprises a high temperature polysilicon thin film transistor control circuit.
- [c19] 19.The capacitive acceleration sensor of claim 11wherein the control circuit is positioned on a printed circuit board (PCB) electrically connected to the plate capacitor via a flexible printed circuit (FPC) board.
- [c20] 20.The capacitive acceleration sensor of claim 11wherein the control circuit is positioned on a flexible printed circuit (FPC) board, the control circuit being electrically connected to the plate capacitor via the flexible printed circuit board.

[c21] 21. The capacitive acceleration sensor of claim 11 wherein the insulating substrate further comprises a thin film transistor display region for displaying a variation of pressure detected by the capacitive acceleration sensor.